Canadian competitiveness in
telecommunications ...

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CANADIAN COMPETITIVENESS IN TELECOMMUNICATIONS AND BROADCAST DISTRIBUTION

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INTRODUCTION

Innovative technologies in telecommunications and broadcast distribution, whether hardware, such as fibre-optic cable, or software applications, such as the Internet, have immeasurably expanded the carrying capacity of telecommunications and broadcast distribution networks. These can now incorporate interactive two-way voice, video, data and graphics information forms, converted to and from the digital language of computers, to provide new services such as video-conferencing, high-capacity data retrieval and processing, and video-on-demand (VOD). These sophisticated telecommunications services present Canadians and their businesses with many commercial opportunities, as well a plethora of new ways of organizing daily and business relations. In fact, these services are becoming increasingly integral to the efficient and timely movement of information in the modern business world. For example, they enable companies to take advantage of "just-in-time" inventory, electronic data interchange, airline computer reservation, and electronic banking and shopping systems. The associated savings from these new services and administrative practices will undoubtedly contribute to the competitiveness of the business sector and to the efficient delivery of government services.

Another important aspect of these technological developments, however, is that they are fostering the globalization of commerce and presenting Canada's business sector with the serious challenge of remaining competitive internationally. Thus, the "Information Revolution," which appears to be global in scope, is a double-edged sword. This challenge is not only for individuals and their businesses, but also for the federal government. As the exclusive responsibility for telecommunications and broadcasting policy in Canada is federal,

it is incumbent on both Houses of Parliament to provide legislation and policy that responds to the social, cultural, political and economic setting of the day. The re-configuration of telecommunications and broadcasting activities along global, rather than national, lines means that policy must be re-designed accordingly.

Any proposal for a change in national telecommunications policy must, however, not only be aware of the major technological trends in the sector and assess their future implications, it must also identify the relative competitive positions of the world's major corporate players and offer credible predictions of their policy reactions. Throughout the industrialized world, telecommunications is recognized as a strategic sector; without a benchmark for the international competitiveness of the Canadian sector, the precise institutional changes that our federal government should adopt, and their timing, remain open to debate. It is incumbent on providers of government policy to complement their forecast of "winds of change" with details of the prevailing direction and velocity of these winds.

This paper provides a detailed analysis of the competitiveness of seven major telecommunications countries. It describes the competitiveness of the telecommunications sectors in Canada and its major competitor countries and evaluates their relative positions; it then examines each country's most recent industrial policy developments in order to predict its likely relative position at the start of the next millennium.

A TELE-COMPETITIVE COUNTRY COMPARISON

While telecommunications carriers compete, rather than governments, the non-availability of critical firm-specific financial and economic data prevent a useful comparison of carrier-by-carrier competitiveness for each country. Therefore, this paper takes a much broader approach to national competitiveness, based on a country's telecommunications sectoral standing. This analysis will be followed by a summary of the most recent and up-coming major policy developments in Canada and selected major countries, which will provide the base for predicting these countries' relative telecommunications competitiveness well into the first decade of the next millennium.

The chosen countries are Australia, Canada, France, Germany, Japan, the United Kingdom (U.K.), and the United States of America (U.S.). Table 1 shows the chosen criteria: market penetration, quality of service, tariffs, government policy, productivity, *infostructure* and sectoral investment.[1] The last year of complete data is 1993. Most criteria will incorporate a range of factors, each of which will be indexed within the category and weighted according to its relative importance. A country ranking will be posted for each criterion; these rankings will then be tallied on an equally weighted basis to determine the overall telecommunications competitiveness of each country.

For example, the market penetration criterion includes factors such as telephone, cellular mobile, cable television and Internet services; quality of service is determined by fault incidences per 100 persons per year; tariffs include an overall basket of rates for residential and business domestic and international services, cellular services and packet-switched services as calculated by the International Telecommunication Union (ITU); government policy incorporates market entry deregulation, tariff deregulation and privatization; productivity is determined by total telecommunications revenue generated per employee; *infostructure* includes the degree of telephone network digitization and personal computer and facsimile machine diffusion within the country; and investment is determined by the amount of sectoral capital formation per revenue dollar.

The results are shown in Table 1 and Appendix A provides the composition, factor weights and the final scores of this index. The finishing positions, in descending order, were Canada, the U.S., Japan, Australia, the U.K., Germany and France. The Canadian and American performances were so close that different criteria or weightings assigned to the factors making up any one competitiveness criterion could have reversed their rank order. Japan and Australia also performed more or less equally, while the U.K., France and Germany were all bunched together at the bottom of this group of seven. Comparing these results to those of a similar study using 1991 data yields similar country index values and

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(1) By *infostructure*, one means all elements of a country's information communications infrastructure, including the capabilities related to the creation, capture, storage, processing, transmission and reception of all forms of information.

rankings, thus confirming that nothing much in terms of relative country competitiveness in telecommunications has changed in the past two years.(2)

Table 1
Country Tele-Competitiveness Rankings - 1993

Ranking	Market Penetration	Quality of Service	Tariffs	Government Policy
1	United States	Canada*	Canada	United Kingdom
2	Canada	United States*	Australia	Japan
3	Australia	Australia*	United Kingdom	United States
4	Germany	Japan	France	Australia
5	France	France	United States	Germany
6	United Kingdom	Germany	Japan	Canada
7	Japan	United Kingdom	Germany	France

Ranking	Productivity	*Infostructure*	Investment	Overall
1	Japan	United States	Germany	Canada
2	United States	Canada	Canada	United States
3	Germany	United Kingdom	France	Japan
4	France	Australia	Japan	Australia
5	United Kingdom	France	Australia	Germany
6	Australia	Japan	United Kingdom	United Kingdom
7	Canada	Germany	United States	France

* Tied for first place, therefore country rankings reflect their 1992 performances.

Interestingly, the first two positions in overall competitiveness are awarded to the two countries that originally chose to have their national telecommunications operations run by private corporations, complemented by an independent regulator(s), rather than delegating these operations to a Crown corporation or merging them within their government-run postal operations. This suggests that, in telecommunications, merging consumer interests via government representation within the corporate bureaucracy can diminish sectoral competitiveness.

Also of interest, while Canada and Australia were hampered by low productivity, mainly due to their small population bases, they both more than made up for this

(2) William H. Davidson and Ronald D. Hubert, *A Telecompetitiveness Infostructure: Enabling a New Future for Canada*, Mesa Research, May 1994.

by similar means: keeping tariffs artificially low through regulation, thus achieving high market penetration. This strategy, while very successful in a natural monopoly technologies environment, is gradually changing, however. Both countries have recognized its limitations in an environment characterized by mature telecommunications technologies. As indicated in Table 2, they have thus begun a move, though at a slower pace than the U.K., Japan and the U.S., towards liberalized market structures in order to capture the benefits offered by the new telecommunications technologies.

Table 2
Market Structure - 1993

Classification	Country	Australia	Canada	France	Germany	Japan	U.K.	U.S.
Public Switched Telephone Network	Local	D	M	M	M	C	C	PC
	Trunk	D	C	M	M	C	C	C
	International	D	M	M	M	C	D	C
Data Communications and Leased Lines	X.25	D	C	1993	C	C	C	C
	LLs	D	C	M	M	C	C	C
Mobile Communications	Analogue	D	RD	D	M	RD	D	RD
	Digital	C	D	D	D	C	C	C
	Radio Paging	C	C	D	1994	C	C	C
Terminal Equipment	CPE	C	C	C	C	C	C	C

C = competition; D = duopoly; RD = regionalized duopoly; M = monopoly; 199X = year competition to be introduced.

Source: OECD, *Communications Outlook 1995*.

CANADIAN POLICY

Of the seven countries tested, Canada placed first in terms of overall competitiveness in the sector, marginally ahead of the U.S. Canada is ranked number one or two in terms of market penetration, quality of service, tariffs, *infostructure* and capital investment; however, it ranked poorly in terms of productivity and provision of up-to-date government policy.

Since sectoral productivity is largely determined by network size, the primary reason for this poor showing is Canada's small and dispersed population base. Little can be done within the sector to overcome this; realistically, only a higher fertility rate and a more liberal immigration policy could do so, and then only in the much longer term. Government policy is another matter; as Canada has from its inception relied on private firms to operate its telecommunications facilities, it fares well in this respect. In terms of deregulating market entry, however, Canada finds itself in the middle of the pack, while in tariff deregulation (using the ratio of business-to-residential tariffs as a proxy for price deregulation in the absence of local-to-long-distance tariff data), it is in second last place. In aggregate, Canada placed second to last of the seven countries in providing liberalized market policies.

Canada has up-to-date legislation in the form of *Telecommunications Act* of 1993 and is well advanced relative to other countries in providing timely legislation governing telecommunications. The government has not, however, provided up-to-date policy direction to the Canadian Radio-television and Telecommunications Commission (CRTC) on matters of deregulation, particularly deregulation of tariffs. While the CRTC was certainly initially slow to accept the notion of competition in the long distance market, as is suggested by Canada's eight-year lag behind the U.S. in introducing competition, the CRTC has decidedly changed direction; this is indicated by its most recent effort to chart a course towards a deregulated local market, which by definition starts with rate-rebalancing (see CRTC Telecom Decision 1994-19). The CRTC explains its plans:

> The 1994 Framework decision introduced a series of interrelated initiatives. Just over one month ago the Commission released its "Split Rate Base" decision, which implemented many of these initiatives and responded to the government's request that the Commission review its decision to initiate a program of partial rate rebalancing. The Commission split the rate bases of the telephone companies into two segments: utility and competitive. ... Shareholders now bear both the risks and rewards associated with their company's competitive services. As you know, local rates are, on average, below cost. A key Commission initiative in the Framework decision was to partially rebalance rates by increasing local rates by a staged, preset amount, while simultaneously reducing long distance rates for basic toll

> services. This rebalancing exercise was explicitly designed to be revenue neutral for the phone companies. Contribution charges, which are paid by both the competitors and the telephone companies' own competitive services, would also be lowered to reflect the reduced subsidy which is required to support local rates.(3)

The Cabinet, however, by asking the CRTC to review Telecom Decision 1994-19, stalled the implementation of rate rebalancing by one year. Moreover, in subsequently relieving Stentor companies of the obligation to lower basic toll rates in a revenue-neutral fashion with respect to local call prices (CRTC Telecom Decision 1995-21), the Cabinet was obviously persuaded by arguments made by Stentor Policy Inc. and BCE Inc.:

> Long distance competition is now a fact of life for the companies I represent. We have lost 25 per cent market share since the introduction of competition five years ago, and there is little indication that this loss in revenue will subside in the near future. ... Competition is vigorous in Canada, with no shortage of market entrants. We estimate that there are approximately 300 long distance competitors operating in the Canadian market, chasing a market worth approximately $8 billion. The United States also has 300 competitors, but they are operating in a long distance market worth $100 billion.(4)

> Since 1986, Bell's long distance prices have declined by 50 per cent while the consumer price index has risen by 50 per cent, so, as some would say, in real terms we have gone down 100 per cent; yet we have not had a general local rate increase since 1983. The result of dramatically falling long distance prices and no local rate increase has meant that the price of long distance in Canada is approximately equal to what it is in the U.S., but our local residence telephone rates are about half of what they are in the U.S. The financial impact of this on Bell Canada is not surprising. Our return on equity went from 13 per cent in the early 1990s to 10.5 per cent in 1993, 9.5 per cent in 1994, and 6.5 per cent in 1995. In the meantime, the U.S. telephone

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(3) David Coville, Canadian Radio-television and Telecommunications Commission, First Session, Thirty-Fifth Parliament 1994-95, *Proceedings of the Standing Senate Committee on Transport and Communications*, No. 34, p. 6-7.

(4) Jocelyne Côté-O'Hara, Stentor Policy Inc., First Session, Thirty-Fifth Parliament 1994-95, *Proceedings of the Standing Senate Committee on Transport and Communications*, No. 37, p. 7.

> companies, the RBOCs, are earning 20 per cent. ... AT&T earned almost 30 per cent last year and is earning 25 per cent this year.(5)

Cabinet's response suggests that the Government of Canada accepts that Stentor's rivals in the long distance market provide sufficient competition to keep long distance rates at competitive levels and that this market is ready to be deregulated (apart from the diminishing competitor contribution rate that goes to the Stentor companies as compensation for subsidizing local rates). One could further conclude that this apparent conflict between the CRTC and the government, plus Cabinet's 1995 Direction Orders to the CRTC for a licensing decision to produce a competitive market in Direct-to-Home (DTH) satellite broadcast services, is producing unnecessary and avoidable stakeholder appeals. These and future appeals are exceedingly costly, both directly, in terms of expenditure of resources, and indirectly, in terms of the resulting market and investor uncertainty. The question then arises of whether the current situation could have been avoided by establishment of a coherent and broadly understood telecommunications policy. Industrial policy remains stalled at both the formulation and implementation stages.

The CRTC's current plans further include a transition period to a deregulated telecommunications market. In 1998, the CRTC will open up the local telephone market to competition. At the same time, telecommunications companies will be permitted to enter the cable television market; until then, they are limited to technical trials of video-dial-tone services that will obviously mature to some form of VOD services. These trials, however, are limited to technical capability and are not permitted to be linked to the acquisition of critical marketing information on prices or public acceptance.

> With regard to the phone companies, we are not given anything but caution signals. Yellow lights and red lights are all we see. We have no sense of any green lights for us to be the explorers that we have been, and to be the innovators that we have demonstrated we can be. In other words, even at this point, we are attempting to do market trials. You cannot deploy new

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(5) Bernard Courtois, Bell Canada, First Session, Thirty-Fifth Parliament 1994-95, *Proceedings of the Standing Senate Committee on Transport and Communications*, No. 36, p. 7-8.

> technologies and put in significant investment unless you know whether it will work. The CRTC tells us we can do technical trials. The world is changing away from technology. Technology is out there. It is not a question of choosing that technology; it is more reflective. The business of the future is to determine what people want. What is the consumer prepared to buy? What does business want? We are having a difficult time receiving support and the approvals we are need to move into market trials.[6]

The long distance telephone companies and cable television companies are the likely entrants into the local wireline telephone market, which should begin to provide adequate competition to the Stentor companies within three or four years. In the interim, local telephone rates are being permitted to rise closer to the full cost of providing them, resulting in reduced long distance company compensation to the Stentor companies for the cross-subsidy to local services. In 1998, rate-base, rate-of-return regulation will be replaced with a price caps formula that has yet to be determined. Access rules and pricing to "bottleneck" facilities in the "local loop," the unbundling of telecommunication facilities and services, and structural separation proceedings are scheduled to be conducted throughout 1996. Thus, one could expect a full year's notice on the ground rules to be provided to current and potential sector stakeholders.

Plans to phase out or eliminate Teleglobe Canada's monopoly on the provision of overseas telecommunications services are in process but so far not concluded. No plans have been announced to deregulate or alter the regulatory framework of cable television services, including tariffs, services bundling provisions and contributions to content providers, despite the plan to introduce competition. Since competition will influence the structure and performance of cultural goods and services, changes to the *Broadcasting Act* will be needed. The exact timing of regulatory forbearance in telecommunications and whether it is likely to come about at all in the regulatory-distinct, but technologically-merging, cable television services market are still unknown.

The length of the transition period to competition and the breadth of deregulation in Canada remain open to speculation. This vagueness reflects the continuing

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(6) Jocelyne Côté-O'Hara (No. 37), p. 13.

technological uncertainty, as well as the uncertainty of Canadian officials in predicting the policy reactions of major competitor countries.

GERMAN POLICY

The German telecommunications sector ranked fifth of those in the seven nations compared. This low ranking stems from a poor record on pricing and service quality, *infostructure* and government policy. Only in terms of productivity and capital investment did the German telecommunications sector do well. Its status is about to change, however.

In part because of re-unification, the German *infostructure* is in relatively poor shape. This to some degree explains the high investment rate, which has been financed in part by high telecommunications tariffs, supported by highly non-competitive regulatory measures. German plans to raise the former East Germany's penetration rate, which in 1984 was 34 subscriber lines per 100 persons, and to achieve 100% digitization of eastern local exchanges by 1997 are ahead of schedule. Pressure from within and outside the country for altering this course, however, has been notably successful.

Effective as of 1 January 1995, the Government of Germany transformed Deutsche Bundespost Telekom into a joint stock company, Deutsche Telekom AG (DT). On 30 January 1995, the Government of Germany announced its plans to liberalize entry and pricing in all telecommunications markets, including international, long distance and local segments, beginning in 1998. The privatization of DT is forthcoming; offerings to the public are likely in several tranches, with 49% of DT shares being sold in 1996 and the government retaining majority ownership until at least the year 2000.[7] Some industry commentators, however, suggest that the German government may be pushed to privatize much more quickly than originally planned, as American government agencies are making this a condition of DT's entry to the proposed Phoenix alliance.

The Government of Germany intends to proceed with the privatization of DT; there will be no provision for limiting foreign ownership in the company as there is none for

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(7) Allison and Humphreys *et al.*, *Global Telecoms Yearbook 1995*, 1995.

DT's existing and eventual competitors. Liberalization would be complete except for the allocation of radio frequencies, which has to be in accordance with the competition rules set out in the Treaty of the European Commission (EC). Where demand is greater than supply, however, radio spectrum may be granted under an auction procedure.

In the period before full competition, non-dominant carriers will only be subject to general rules of competition as required under EC law, while the dominant carriers, as determined by Germany's general cartel authority and the EC's 25% market share rule, will have to fulfil certain obligations. These include provision of specific universal service (i.e., access at affordable prices), implementation of an open and efficient access to networks and services, interconnection of networks, the approval of rates by the regulatory authority and compliance with special accounting regulations.

It is expected that competition would come primarily from electricity companies that have operated their own internal telecommunications networks but are being upgraded to public network standards. Viag and Veba have formed telco subsidiaries and joined forces with British Telecom plc (BT) and Cable & Wireless plc (C&W), respectively, to position themselves for entry in 1998.

Germany is now the largest European market; the unrestricted foreign capital forthcoming to supplement an already high domestic investment rate in telecommunications will likely augment the country's competitiveness standing in both absolute and relative terms. Liberalization should proceed very rapidly in Germany as its current high tariffs and low-quality service have created an atmosphere favourable to reform.

JAPANESE POLICY

Japan's telecommunications sector placed third of those in the seven countries compared, noticeably behind Canada and the U.S. but only narrowly ahead of Australia. Japan's strong position emanates from its unmatched high productivity, very good service quality and liberalized government policy. Its primary weaknesses, as in many producer-

oriented capitalist countries, are rooted in its poor *infostructure* and market penetration, the latter caused primarily by high tariffs.

Since 1985, Japan has opened up to competition all its telecommunications markets, including the mobile cellular and digital wireless, local, long distance and international segments. The market has been classified into Type I or Type II operators, according to whether they own or lease transmission facilities. The former monopolies of NTT, KDD and NTT DoCoMo now compete with more than 100 relatively small companies offering a variety of long distance, satellite, regional (prefectural), international and mobile communications services. Most of these companies offer mobile wireless services; there are only three facilities-based, long distance carriers, two international services carriers (which are themselves consortia of the largest consumers of these services in Japan), and 11 regional carriers. There are also in excess of 2,000 small, very specialized Type II carriers.[8]

By 1993, these competitors had captured approximately 30% of the entire Japanese telecommunications market. The new carriers have been most successful in mobile services, where they have a 40% market share, and least successful in local services, where they have a 7% market share.[9] Long distance tariffs have declined by more than 55% since the introduction of competition (60% for international services and more than 70% for leased lines).[10] Deregulation has thus been very favourable to Japanese consumers; however, much more could be accomplished with the contemplated further restructuring of the telecommunications sector.

Japanese policy makers are just now coming to grips with the Information Revolution. Japan has traditionally concentrated its efforts on providing its 140 million people with high-quality public education to the high school level and then letting industry invest heavily and selectively in on-the-job training to develop the human resource skills necessary for aggressive competition in international markets. Though Japanese industry has been slow

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(8) Japan, Ministry of Posts and Telecommunications, *Outline of the Telecommunications Business in Japan*, Tokyo, May 1994, p. 3.

(9) *Ibid.*, p. 5.

(10) *Ibid.*, p. 8.

to adopt the new information technologies, this is changing. Stiff competition from low-wage "Asian Tiger" countries is forcing Japanese companies to raise their labour productivity, which they see best accomplished by investing in the new information technologies.

The Diet has launched a two-pronged attack for overcoming Japan's historical disadvantages in telecommunications (as confirmed by our analysis, these are poor *infostructure*, high tariffs and low market penetration). MITI is implementing plans for greater diffusion of computer hardware and software products, while MPT is concentrating its efforts on adoption of such telecommunications innovations as fibre-optic cable, ISDN, and wireless communications.

Japanese planned investments will total ¥123 trillion or about $1.6 trillion between 1995 and 2010, by which time the sector is expected to be 100% digital, with a 100% fibre-optic cable deployment rate in the local loops. The Diet intends to provide additional financing, including long-term interest-free loans from the Japan Development Bank for multi-media projects, a 20% rise in capital depreciation write-off provisions for taxation purposes and special R&D incentives.

KDD will invest about one trillion yen in multi-media services through the year 2000: cable/satellite, ¥550 billion; switching/information system, ¥250 billion; and R&D, ¥200 billion. In fiscal year 1995, KDD will invest ¥28 billion of this amount, with the funds for this investment coming from internal company sources. Foreign investment in KDD and joint ventures with North American companies are welcomed. KDD officials, recognizing that Canada is well advanced in remote education and medicine, believe that there is great potential for Canadian companies to modify current software for the Japanese market through joint ventures.

MPT further plans to divide NTT into a single long distance services provider with four regional operating companies, on the lines of the U.S. Department of Justice's ordered breakup of AT&T in 1984. This would force the separation and divestiture of local and long distance telephone networks; the threat of predatory behaviour by a much smaller and less diversified NTT would therefore be significantly reduced. Absent these threats from the Goliath NTT, now the largest telecommunications company in the world, the regional

carriers would seriously contest the dominance of the newer NTT regional operating companies in their respective local markets. As a result, Japan's telephone services tariffs will eventually begin to reflect the true costs of providing them; rates between rural and urban, between business and residential, and between local and long distance services, would be rebalanced and market penetration improved at the same time. Thereafter, a slow but persistent rise in Japanese competitiveness in international telecommunications should be expected.

UNITED KINGDOM POLICY

The U.K. telecommunications sector placed sixth of those in the seven countries compared, just barely ahead of Germany and France. The U.K. benefits from relatively low tariffs, good *infostructure* and very liberal market policies. On the other hand, quality of service, market penetration, productivity and sectoral investment have been lacking, a perennial problem for the U.K.; however, government policies put into effect in the early 1990s are likely to change these conditions by the end of the millennium.

By year end 1995, cable television passed six million households, laying 40,000 kilometres of cable and investing £3.2 billion as part of a £12 billion investment plan to cover 75% of the U.K. population by the year 2005. Cable television companies currently have 1.1 million subscribers and telephony companies have 1.2 million. Furthermore, the lack of full telephone number portability, a barrier to entry for 9% of residential subscribers and 15% of business subscribers, is currently being implemented, with the cost of compliance to be underwritten by British Telecom (BT).[11]

British officials have always been quick to point out that the U.K., because of its very liberal market policies, has been by far the most dynamic market. Competition is more intense in the U.K. than in any of the other six countries studied. BT faces competition in residential local services, the fundamental building block of a national telecommunications

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(11) United Kingdom, Office of Telecommunications, *Telecom Services: Influences on Customers' Choice of Suppliers*, November 1995, p. 6.

network, from Mercury (a subsidiary of C&W (80%) and BCI Inc. (20%)), cable television companies and public utilities. In 1994, there were more than 130 companies licensed to provide voice communications in the U.K., with Mercury and the cable television/telephony companies capturing about 8% market share in local services. The U.K. was also the first country to permit cross-industry licensing of telephony and cable television companies. The only apparent market restriction is that BT cannot directly enter cable television until at least 2001; the official positions of the major political parties suggest that this restriction will not be extended. BT affiliates, however, do own structurally-separated cable television systems and are developing VOD services.

> In England today, they allow the cable company to provide not only cable services but local access dial tone services. Our research in the U.K. indicates that 40 per cent of these customers in the U.K. are choosing the "bundled" service; that is, the service the cable companies and the telephone companies provide together, and they are using that as a marketing strategy. One of the things they have been doing ... is that if you subscribe to their cable, you get local access to the dial tone free for six months. That is how they are attracting customers to their service.[12]

Without a doubt, this competitive "hotbed" experiment will resurrect the U.K.'s telecommunications sector. Recent statistics indicate that about 70% of new telephone service subscribers jointly subscribe to cable television services. Foreign input into cable television in the U.K. accounts for about 90% of all investment in this sector; 70% of this foreign input originates in the U.S., mainly from AT&T and some Regional Bell Operating Companies (RBOCs).[13] The Radiocommunications Agency, the independent government institution that allocates radio spectrum for civil purposes, is studying the use of auctions and various pricing mechanisms to induce more efficient exploitation of its spectrum. Thus, it is expected that the U.K. will improve its competitive position in the medium term, with all

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(12) Fares F. Salloum, BC Telecom Inc., First Session, Thirty-Fifth Parliament 1994-95, *Proceedings of the Standing Senate Committee on Transport and Communications*, No. 16, p. 50.

(13) London Economics, *UK Government Policy towards the Cable TV Industry and the Case for Staged Evolution to Full Competition*, London, January 1995, p. 8-9.

telecommunications and broadcast distribution market segments having a competitive structure by 2002.

UNITED STATES POLICY

The U.S. telecommunications sector ranked second of those in the seven countries compared, but could have easily finished first had alternative criteria been chosen. The U.S. finished anywhere between first and third in all criteria except tariffs and capital investment. The poor performances in these two criteria are likely to change dramatically in the short to medium term as the passage of a new law should bring unfettered competition in all telephone market segments as well as in cable and satellite television.

The U.S. Congress has recently passed a wide-sweeping telecommunications bill that will put an end to the statutory-created monopolies in local telephony and cable television. The new law allows telephone companies to buy cable systems, or vice versa, in rural areas with fewer than 35,000 people and under certain circumstances. The prohibition on acquisition of cable systems in larger communities remains in force, except for ownership levels below 10%. The new law also pre-empts state and local regulations barring cable television companies and others from providing local telephone services; it requires the RBOCs to negotiate with the telephone entrants for interconnection, number portability, dialling parity, access to rights-of-way and reciprocal compensation. In return for granting access and interconnection to their local loops, and provided some minimal competition criteria have been established, the RBOCs will be allowed to enter the long-distance market. The tariffs of the larger cable television companies will be deregulated in three years or less when competition comes from sources other than direct broadcast satellites. The tariffs of cable systems with fewer than 50,000 subscribers and with unaffiliated companies with less than US$250 million in annual revenues were deregulated upon the bill's enactment. As a consequence, improved performances in tariffs and investment are expected in the short to medium term.

In 1995, the Federal Communications Commission (FCC) auctioned off PCS licences for use of its radio spectrum in a bid to ensure the most efficient use of this scarce resource and the highest possible return to its owners — American citizens/taxpayers. The auction raised in excess of US$7 billion, adding to the previous year's auctioning off of paging and interactive television licences that had netted the federal treasury US$2 billion. The three highest Personal Communications Services licence bidders were:

(1) Wirelessco L.P., a consortium comprising the Sprint Corporation, Comcast, Cox Communications and Tele-Communications Inc. (three of the nation's largest cable television companies), winning 29 licences covering a population of 145 million at a cost of US$2.1 billion;

(2) AT&T winning 21 licences covering a population of 107 million at a cost of US$1.7 billion; and

(3) PCS Primeco L.P., a consortium comprising Nynex, Bell Atlantic, Air Touch Communications and US West, winning 11 licences covering a population of 57 million at a cost of US$1.1 billion.

The FCC has further auctioned off its last national Direct Broadcasting Satellite (DBS) slot to MCI/News Corp. for US$682.5 million. In 1997, MCI/News Corp. will join the four existing DBS companies: (1) DirecTv, owned by Hughes Electronics Corp.; (2) United States Satellite Broadcasting, owned by Hubbard Broadcasting; (3) PrimeStar, owned by TCI, Time Warner, Comcast Corp., Continental, Cox Communications and GE Americom; and (4) EchoStar, owned by EchoStar Communications Corp. The FCC also has plans for auctioning off spectrum for high-definition television services, estimated to be worth US$6 billion.

Clearly, the objectives of the new *Telecommunications Act* and the adoption of auctions to allocate spectrum are designed to create a competitive environment, thereby stimulating greater sectoral investment and lower and re-balanced service rates — at present the two weakest components. It is expected that the American telecommunications sector should begin showing signs of increased competitiveness almost immediately. It would not be a big stretch to conclude that the United States has already surpassed Canada as the first nation of the world in telecommunications and broadcast distribution.

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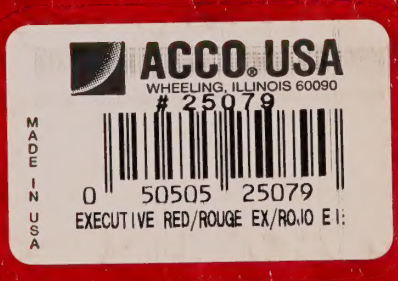
APPENDIX A
THE TELE-COMPETITIVENESS INDEX

Competitiveness Criteria	Australia	Canada	France	Germany	Japan	United Kingdom	United States
Market Penetration	4.28	6.04	2.92	3.83	2.85	2.86	6.63
Quality of Service	10.00	10.00	7.36	5.06	9.22	4.36	10.00
Tariffs	5.36	5.75	4.89	4.55	4.69	4.97	4.78
Government Policy	5.45	5.13	3.11	5.42	7.20	7.68	6.01
Productivity	4.36	4.31	4.70	4.82	6.57	4.41	5.30
Infostructure	6.02	6.60	4.67	3.60	4.56	6.03	7.42
Investment	4.05	5.89	5.44	8.46	5.02	3.27	2.87
Overall	5.65	6.25	4.73	5.11	5.73	4.80	6.22

Competitiveness Criteria	Country						
	Australia	Canada	France	Germany	Japan	United Kingdom	United States
Market Penetration							
Main Lines per 100 Inhabitants	48.2	59.2	53.6	45.7	46.8	49.4	57.4
Cellular Subs. per 1,000 Inhabitants	4.3	4.6	0.8	2.2	1.7	2.0	6.2
Internet Hosts per 1,000 Inhabitants	1.5	1.8	1.0	0.7	0.2	0.9	3.1
CableTV Subs. per 100 Inhabitants	n.a.	26.9	2.8	18.0	8.3	1.6	23.2
Quality of Service							
Faults per 100 Lines per Year	0.0	0.0	7.5	14.0	2.2	16.0	0.0
Tariffs (US$)							
Residential Services Basket	356	239	319	318	284	338	351
Business Services Basket	984	855	840	855	736	722	846
Cellular Mobile Services Basket	1,019	1,008	1,938	1,489	1,859	1,344	1,757
Packet-Switched Data	10,818	8,657	7,846	14,223	12,402	14,047	8,767
International Residential Services Basket	73.38	87.00	102.48	104.87	108.50	94.58	98.47
International Business Services Basket	78.83	90.93	98.83	107.39	103.22	89.16	108.38
Government Policy							
Market Entry Deregulation	6.3	6.3	2.2	1.3	9.4	8.8	9.1
Price Deregulation (Bus/Resident Ratio)	5.1	2.8	4.8	10.0	6.5	6.2	2.6
Privatization	5.0	10.0	0.0	0.0	5.0	10.0	10.0
Productivity							
Total Revenue per Employee (US$)	118,944	122,012	146,066	154,720	290,766	131,252	229,021
Infostructure							
Digitization (%)	50.0	80.0	86.4	37.0	72.0	74.9	66.0
Personal Computers per 100 Inhabitants	21.7	19.0	14.0	14.4	11.0	15.1	27.0
Facsimile Machines per 100 Inhabitants	7.1	6.6	1.4	3.1	3.1	6.5	8.2
Investment							
Investment per Revenue Dollar (%)	21.3	31.0	28.6	44.5	26.4	17.2	15.1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